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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,441	09/19/2004	David Famolari	004900.00025	5440

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EXAMINER	
SAFAIPOUR, BOBBAK	
ART UNIT	**PAPER NUMBER**
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06/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,441	FAMOLARI, DAVID	
	Examiner	Art Unit	
	BOBBAK SAFAIPOUR	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-7,10-12,16-19 and 22-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-3, 8, 13-15, 20* is/are allowed.

6)☒ Claim(s) *4-7,10-12,16-19 and 22-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/30/2009 has been entered.

Claims 9 and 21 have been cancelled.

Claims 1-8, 10-20, and 22-26 are still pending in the present application.

Claims 1-3, 8, 13-15, and 20 were previously indicated as allowed.

Response to Arguments

Claims 4-7 and 16-19

Applicant argues even assuming (without admitting) that such an analogy is proper when the Examiner contends that if the GPS location described in Velazquez is updated every 2 seconds, then updating the entry for the station is responsive to every transmission by the station, *at most the update in Velazquez is conducted with respect to a select beam*. Amended claim 4 recites features related to updating a basis beam based on the updated entry for the station.

The Examiner respectfully disagrees. Velazquez discloses the base station transmits its position to the mobile unit via the Paging Channel. If the mobile unit is employing a directive antenna array 35', it uses the base station position and its current position and heading information to form a beam pattern toward the base station. The mobile tunes to the Traffic Channel and starts sending a Traffic Channel preamble and the current mobile location

information to the base station via a Reverse Traffic Channel. Every two seconds, the GPS location is updated and sent to the base station via the Reverse Traffic Channel. If the mobile unit is employing a directive antenna array 35', every two seconds it uses the current heading information and compares its updated position information to the stored location of the current base station to update the beam pattern *(read as basis beam)* toward the base station *(read as updating an entry for a station responsive to every transmission by the station)* (paragraphs 57-58). Applicant argues that Velazquez imposes a time threshold requirement for purposes of updating a beam pattern. As Velazquez discloses, every two seconds, the GPS location is updated and sent to the base station. The Examiner respectfully argues that if the GPS location is updated every 2 seconds, then updating the entry for the station is responsive to every transmission by the station, as claimed in the present application.

The simple fact remains that the claims only broadly recite a basis beam. It has been shown that a basis beam is taught in Velazquez. If the Applicant intends to differentiate between the beam pattern of Velazquez and the basis beam of the instant application, then such differences should be made explicit in the claims. Examiner notes that paragraph 29 of the instant application discloses that "[o]ne beam forming operation adjusts the AA to provide a beam with the maximum angular spread to adequately cover all current stations in the network. This beam is referred to as the Basis Beam (BB) 510." The Examiner recommends that the Applicant include similar language in the claims as disclosed in the specification to clearly distinguish the basis beam.

As a result, the argued features are written such that they read upon the cited references; therefore, the previous rejection still applies.

Claims 12 and 24

Applicant argues that the Velazquez fails to disclose updating an entry for a station responsive to every transmission by the station. Applicant argues that the update in Velazquez is conducted with respect to a select beam whereas the claims recited features related to updating a basis beam based on the updated entry for the station.

The Examiner respectfully disagrees. Velazquez discloses the base station transmits its position to the mobile unit via the Paging Channel. If the mobile unit is employing a directive antenna array 35', it uses the base station position and its current position and heading information to form a beam pattern toward the base station. The mobile tunes to the Traffic Channel and starts sending a Traffic Channel preamble and the current mobile location information to the base station via a Reverse Traffic Channel. Every two seconds, the GPS location is updated and sent to the base station via the Reverse Traffic Channel. If the mobile unit is employing a directive antenna array 35', every two seconds it uses the current heading information and compares its updated position information to the stored location of the current base station to update the beam pattern *(read as basis beam)* toward the base station *(read as updating an entry for a station responsive to every transmission by the station)* (paragraphs 57-58). Applicant argues that Velazquez imposes a time threshold requirement for purposes of updating a beam pattern. As Velazquez discloses, every two seconds, the GPS location is updated and sent to the base station. The Examiner respectfully argues that if the GPS location is updated every 2 seconds, then updating the entry for the station is responsive to every transmission by the station, as claimed in the present application.

The simple fact remains that the claims only broadly recite a basis beam. It has been shown that a basis beam is taught in Velazquez. If the Applicant intends to differentiate between the beam pattern of Velazquez and the basis beam of the instant application, then such differences should be made explicit in the claims. Examiner notes that paragraph 29 of the instant application discloses that "[o]ne beam forming operation adjusts the AA to provide a beam with the maximum angular spread to adequately cover all current stations in the network. This beam is referred to as the Basis Beam (BB) 510." The Examiner recommends that the Applicant include similar language as disclosed in the specification to clearly distinguish the basis beam.

As a result, the argued features are written such that they read upon the cited references; therefore, the previous rejection still applies.

Claims 25-26

Applicant argues that one skilled in the art, starting from Park and taking Park as a whole, would not have had an apparent reason to modify Park to incorporate the alleged teachings of Velazquez related to performing a determination of an angle of arrival at an access point because Park devotes computing resources to performing such a determination at a terminal. More specifically, one skilled in the art would not have had an apparent reason to replicate the computing resources of the Park terminal at an access point, because doing so would unnecessarily increase the complexity of the Park system taken as a whole. As such, Applicant respectfully submits that the combination of references is improper for at least these reasons, and thus, claim 25 is allowable.

The Examiner respectfully disagrees. Velazquez discloses the beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal, and generates a set of complex antenna weights to apply to each antenna output for each mobile unit such that the combined signal represents a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals. The complex antenna weights are calculated to simply steer the antenna beam. (paragraphs 58-67) It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Park to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4-7 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bahl (United States Patent Application Publication #2002/0095486 A1)** in view of **Velazquez et al (US 2001/0003443 A1; hereinafter Velazquez).**

Consider **claim 4**, Bahl discloses a method comprising the steps of determining when an entry for a station had been last updated in a table (figure 2; User database 206) in a wireless access point (figure 2; paragraphs 30-38 and 45); and determining if a time for said last update for said station is greater than a threshold (figure 2; paragraphs 30-38 and 45); listening for a transmission by said station (figure 2; paragraphs 30-38 and 45).

Bahl fails to specifically disclose updating said entry for said station responsive to every transmission by said station and updating a basis beam based on said updated entry for station.

In related art, Velazquez discloses updating said entry for said station responsive to every transmission by said station and updating a basis beam based on said updated entry for station (paragraphs 58-69; The base station receives the updated mobile unit location information and updates it beam pattern towards the mobile unit.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Bahl to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 16**, Bahl discloses a system for updating a table in a wireless access point comprising means for determining when an entry for a station had been last updated in a table (figure 2; User database 206) in a wireless access point (figure 2; paragraphs 30-38 and 45); means for determining if a time for said last update for said station is greater than a threshold (figure 2; paragraphs 30-38 and 45); and means for receiving a transmission by said station (figure 2; paragraphs 30-38 and 45).

Bahl fails to specifically disclose and updating said entry for said station responsive to every transmission by said station and updating a basis beam based on said updated entry for station.

In related art, Velazquez discloses updating said entry for said station responsive to every transmission by said station and updating a basis beam based on said updated entry for station (paragraphs 58-69; The base station receives the updated mobile unit location information and updates it beam pattern towards the mobile unit.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Bahl to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 5**, and **as applied to claim 4 above**, Bahl, as modified by Velazquez, discloses sending survey packets to said station (Bahl: paragraph 26).

Consider **claim 6**, and **as applied to claim 4 above**, Bahl, as modified by Velazquez, discloses the claimed invention wherein said table includes angle of arrival information. (Velazquez: paragraph 60)

Consider **claim 7**, and **as applied to claim 4 above**, Bahl, as modified by Velazquez, discloses the claimed invention wherein said table includes angle of arrival information computed from synchronization information received in a signal from said station. (Velazquez: abstract; paragraphs 58-69)

Consider **claim 17**, and **as applied to claim 16 above**, Bahl, as modified by Velazquez, discloses means for sending survey packets to said station (Bah: paragraph 26).

Consider **claim 18**, and **as applied to claim 16 above**, Bahl, as modified by Velazquez, discloses the claimed invention except wherein said table includes angle of arrival information. (Velazquez: paragraph 60)

Consider **claim 19**, and **as applied to claim 16 above**, Bahl, as modified by Velazquez, discloses the claimed invention except wherein said table includes angle of arrival information computed from synchronization information received in a signal from said station. (Velazquez: abstract; paragraphs 58-69)

Claims 10-12, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goransson et al (United States Patent Application Publication # 2004/0121810 A1)** in view of **Velazquez et al (US 2001/0003443 A1; hereinafter Velazquez).**

Consider **claim 10**, Goransson et al disclose a method for adjusting beams comprising the step of forming a select beam to cover said station (paragraph 26), but fails to disclose decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station; and decoding a second part of a transmitted packet as received via said select beam.

In related art, Velazquez discloses decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station (abstract; paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal); and decoding a second part of a transmitted packet as received via said select beam. (abstract; paragraphs 58-69; a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Goransson to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 12**, Goransson et al disclose a method for adjusting beams comprising the step of adjusting a basis beam to ensure coverage of said mobile station (paragraph 26), but fails to disclose decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station; adjusting a basis beam

to ensure coverage of said mobile station based on said angle of arrival; and decoding a second part of a transmitted packet as received via said select beam.

In related art, Velazquez discloses decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station (abstract; paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal); adjusting a basis beam to ensure coverage of said mobile station based on said angle of arrival (abstract; paragraphs 58-69; The complex weights are calculated to simply steer the antenna beam); and decoding a second part of a transmitted packet as received via said select beam. (abstract; paragraphs 58-69; a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Goransson to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 22**, Goransson et al disclose a system for adjusting beams comprising: means for forming a select beam to cover said station (paragraph 26), but fails to disclose means for decoding at an access point a first part of a transmitted packet to determine of said transmitted packet as transmitted from a mobile station; and means for forming a select beam to

cover said mobile station based on said angle of arrival; and means decoding a second part of a transmitted packet as received via said select beam.

In related art, Velazquez discloses means for decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station (abstract; paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal); and decoding a second part of a transmitted packet as received via said select beam. (abstract; paragraphs 58-69; a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Goransson to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 24**, Goransson et al disclose a system for adjusting beams comprising means for adjusting a basis beam to ensure coverage of said station (paragraph 26), but fails to disclose means for decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station; means for adjusting a basis beam to ensure coverage of said mobile station based on said angle of arrival; and decoding a second part of a transmitted packet as received via said select beam.

In related art, Velazquez discloses means for decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station (abstract; paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal); means for adjusting a basis beam to ensure coverage of said mobile station based on said angle of arrival (abstract; paragraphs 58-69; The complex weights are calculated to simply steer the antenna beam); and decoding a second part of a transmitted packet as received via said select beam. (abstract; paragraphs 58-69; a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Goransson to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 11**, and **as applied to claim 10 above**, Goransson et al, as modified by Velazquez, disclose the claimed invention wherein updating an angle of arrival table in said access point with said determined angle of arrival information. (Velazquez: abstract; paragraphs 58-69)

Consider **claim 23**, and **as applied to claim 22 above**, Goransson et al, as modified by Velazquez, disclose the claimed invention except means for updating an angle of arrival table in

an access point with said determined angle of arrival information. (Velazquez: abstract; paragraphs 58-69)

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Park et al (United States Patent Application Publication #7,043,272 B2; hereinafter Park)** in view of **Velazquez et al (US 2001/0003443 A1; hereinafter Velazquez).**

Consider **claim 25**, Park et al disclose an access point comprising:

an antenna array; (figure 1, 101; figure 7; col. 8, lines 45-63)

one or more processes that receive packets from said antenna, said packets generated by mobile stations, said one or more processors decoding a first portion of said packets (abstract; fig. 7; col. 6, line 24 - col. 7, line 7; col. 8, lines 45-63).

Park et al fails to specifically disclose determining the angle of arrival of said packets, and outputting antenna array weights to said antenna array to steer a select beam to cover said mobile stations.

In related art, Velazquez discloses determining the angle of arrival of said packets, and outputting antenna array weights to said antenna array to steer a select beam to cover said mobile stations. (paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal, and generates a set of complex antenna weights to apply to each antenna output for each mobile unit such that the combined signal represents a beam pattern steered in the direction of the desired mobile unit for both the

transmit and receive signals. The complex antenna weights are calculated to simply steer the antenna beam.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Park to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 26**, and **as applied to claim 25 above**, Park et al, as modified by Velazquez, disclose the claimed invention wherein said processor further outputs antenna array weights for adjusting a basis beam generated by said antenna array. (Park et al: col. 6, line 24 - col. 7, line 7; col. 8, lines 45-63)

Allowable Subject Matter

Claims 1-3, 8, 13-15, and 20 are allowed.

Consider **claim 1**, the best prior art of record found during the examination of the present application, **Park et al (US 7,043,272 B2)**, fails to specifically disclose, teach, or suggest an angle of arrival of said mobile station is determined from header information contained in said header, and wherein said forming step determines if said mobile station is covered by comparing said angle of arrival of said mobile station with angles covered by said basis beam.

Claims 2-3 are allowable because it is dependent upon independent claim 1.

Consider **claim 8**, the best prior art of record found during the examination of the present application, **Park et al (US 7,043,272 B2)**, fails to specifically disclose, teach, or suggest an angle of arrival of said mobile station is determined from header information contained in said header, and wherein said forming step determines if said mobile station is covered by comparing said angle of arrival of said mobile station with angles covered by said basis beam.

Consider **claim 13**, the best prior art of record found during the examination of the present application, **Park et al (US 7,043,272 B2)**, fails to specifically disclose, teach, or suggest an angle of arrival of said mobile station is determined from header information contained in said header, and wherein said forming step determines if said mobile station is covered by comparing said angle of arrival of said mobile station with angles covered by said basis beam.

Claims 14-15 are allowable because it is dependent upon independent claim 13.

Consider **claim 20**, the best prior art of record found during the examination of the present application, **Park et al (US 7,043,272 B2)**, fails to specifically disclose, teach, or suggest an angle of arrival of said mobile station is determined from header information contained in said header, and wherein said forming step determines if said mobile station is covered by comparing said angle of arrival of said mobile station with angles covered by said basis beam.

Conclusion

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450

Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Bobbak Safaipour whose telephone number is (571) 270-1092. The Examiner can normally be reached on Monday-Friday from 9:00am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Matthew Anderson can be reached on (571) 272-4177. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

/Bobbak Safaipour/
Examiner, Art Unit 2618

June 3, 2009

/Matthew D. Anderson/

Supervisory Patent Examiner, Art Unit 2618